

U.S. Serial No. 09/933,987

## REMARKS

### Status of the Claims

Claims 1-5, 7-9, 12-20, 26-40 and 42-46 are pending herein, claim 36 having been canceled without prejudice or disclaimer.

### Claim Objection

Claim 36 is objected to, because there is allegedly no disclosure of a cover not having a substrate sub-layer. Although Applicant disagrees, this claim has been removed at this time to expedite prosecution and secure allowance.

### Claim Rejections under 35 USC §112, second paragraph

Claims 9, 31 and 42 are rejected under 35 USC §112, second paragraph as allegedly being indefinite. These rejections are believed to be moot in view of the above amendments to claims 9, 31 and 42. Reconsideration and withdrawal of this rejection are therefore requested.

### Rejection under 35 U.S.C. 103(a)—Rogers and Nishio

Pending claims 1, 3-5, 7-9, 16, 17, 19, 20, 43 and 45 stand rejected under 35 U.S.C. 103(a) as being obvious over Rogers (U.S. Patent No. 6,081,071) in view of Nishio (U.S. Patent No. 6,081,071). Applicant respectfully traverses this rejection and its supporting remarks.

For example, independent claims 1 and 17 are directed to an OLED device structure and a method of making the same. The OLED device structure of these claims comprises: (a) a substrate; (b) an OLED display area comprising a plurality of active pixels which are disposed over the substrate and which comprise an anode region, a cathode region and a light-emitting region; (c) a cover over the OLED display area, wherein the cover permits transmission of light from the active pixels to an outer environment cover over the OLED display area, wherein the cover permits transmission of light from the active pixels to an outer environment, and wherein the cover and the substrate cooperate to restrict transmission of oxygen and water vapor from the outer

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environment to the OLED display area; and (d) a patterned getter layer disposed between the substrate and the cover, the patterned getter layer being configured so as to substantially avoid obstructing the transmission of light that is permitted by the cover from the pixels to the outer environment, wherein at least a portion of the patterned getter layer is provided between at least some of the plurality of pixels.

These claims are not obvious in view of Rogers and Nishio. As recognized in the Office Action, Rogers does not describe a patterned getter layer, which is disposed between the substrate and the cover, which is configured so as to substantially avoid obstructing the transmission of light that is permitted by the cover from the pixels to the outer environment, at least a portion of which patterned getter layer is provided between at least some of the plurality of pixels.

The Office Action urges, however, that these deficiencies are made up by Nishio, arguing that Nishio "discloses (column 3 lines 1-3, column 8 lines 10-14, column 12 lines 17 Figs. 8c and 9) desiccant added to adhesive 33 [*sic*, the adhesive is numbered 9/10, whereas the numeral 33 corresponds to a silicon dioxide passivation film] is deposited in the peripheral region around small size panels comprising pixels. Nishio discloses the placement of desiccant in such a space effectively reduces deterioration of the EL element that may be caused by exposure to oxygen."

The Office Action then concludes that "it would have been obvious to one of ordinary skill in the art at the time of the invention to include the patterned getter layer between some of the plurality of pixels of the display of Rogers as taught by Nishio for effectively reducing deterioration of EL elements that may be caused from exposure to moisture."

Applicant respectfully disagrees.

First, the examiner makes reference to Figs. 8c and 9 of Nishio. However, these Figs. do not illustrate a desiccant at all, but rather illustrate small-size panels 21, 22, 23, 24 upon a large-size support 25. A plug portion 31 is provided to fill the space 30 and a seat portion 32 is provided in a region over each small-size panel 21, 22. The plug and seat portions 31 and 32 correspond to a negative resist. A passivation film 33 is provided over the plug and seat portions 31 and 32. Also shown in Fig. 9 are driving circuits driving circuit 21a, 22a, 23a, 24a, 21b, 22b, 23b, 24b.

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It is noted that a drying agent region 37 is illustrated in FIG 8(e) of Nishio. However, even assuming solely for the sake of argument that the cover 36 permits transmission of light from the active pixels to an outer environment as claimed in claims 1 and 17, the drying agent region 37 of Fig. 8(e) is not configured so as to substantially avoid obstructing such light transmission. Instead, the drying agent region 37 is illustrated as substantially blanketing the cover 36.

The Office Action also refers to column 8, lines 10 to 14, in which it is noted that the adhesive may contain a drying agent, and to column 12, line 17, which refers to an organic EL medium 34.

The Office Action further makes reference to column 3, lines 1 to 8, which reads as follows: "However, in the case where the large-size support is located opposite to the light-exiting side of the device, the adhesive layer may be provided to overlie only a periphery of each small-size panel. In such a case, the peripherally-extending adhesive layer defines an interior space between the small-size panel and large-size support. The placement of a desiccant in such a space effectively reduces deterioration of the EL element that may be caused by the exposure to a moisture."

Such an embodiment is illustrated in FIG. 5 of Nishio. However, as clearly seen from this figure, Nishio neither teaches nor suggests devices in accordance with claims 1 and 17, which include, *inter alia*, the following: (a) a cover that permits transmission of light from the active pixels to an outer environment and (b) a patterned getter layer, at least a portion of which is provided between at least some of the plurality of the pixels (which pixels are disposed over a common substrate as claimed), which is configured so as to substantially avoid obstructing the transmission of light that is permitted by the cover from the pixels to the outer environment.

In particular, light exits the device of FIG. 5 through the substrate, rather than the cover. See, e.g., the arrows shown in FIG. 5. See also col. 6, lines 30-34, in which it is explained that each panel 1,2 has a glass or other transparent substrate, and that the device is designed such that light emitted from each organic EL element passes through the transparent substrate and exits the device.

As defined in pending claims 1 and 17, the cover is positioned on a side of the device that is opposite that of the substrate. Hence, to the extent that any structure in Fig.

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5 can be argued to correspond to the cover of claims 1 and 17, it is the large-size support 5. However, the large-size support 5 does not "permit transmission of light from the active pixels to an outer environment" as claimed.

Furthermore, the Office Action refers to the Nishio's teachings in conjunction with Figs. 1 to 3, in which it is noted that a drying agent can be added to the adhesive. This makes sense in conjunction with Figs. 1 to 3, because no other desiccant is provided. However, in devices like those described at col. 3, lines 1-8 and illustrated in Fig. 5, a desiccant is provided within the space between the panels 1-4 and the large-size support 5, thereby filling the need that was filled in Figs. 1 to 3 by providing a desiccant in the adhesive. In this regard, it is respectfully submitted that the Office Action is applying impermissible hindsight, using Applicant's own disclosure as a template to pick and choose isolated elements from the prior art and combine them so as to yield the invention in question.

In addition, even assuming solely for the sake of argument that the support 5 did "permit transmission of light from the active pixels to an outer environment" and that a drying agent was to be provided within all adhesive embodiments, including that described at col. 3, lines 1-8 and illustrated in Fig. 5, it is nonetheless respectfully submitted that the adhesive material region 9/10 is not "provided between at least some of the plurality of pixels" as claimed in claims 1 and 17, because the claimed pixels are disposed over a single substrate. Indeed, disposing the adhesive between pixels on a given substrate wouldn't make sense due, for example, to the close inter-pixel spacing found in most display devices and to the reasons that result in the application of the adhesive in the device of FIG. 5 in the first place (i.e., to secure multiple panels to a large-size support).

It is also noted that, where Nishio does teach the use of a peripherally-extending adhesive layer 9/10 to define interior spaces between the small-size panels and the large-size support, Nishio also places a desiccant/drying agent in such spaces to reduce deterioration of the EL element. See, e.g., column 3, lines 1-7 as well as claim 6. Such a desiccant/drying agent 14 can be clearly seen in FIG. 5. However, this drying agent 14 is clearly not positioned between pixels nor is it configured so as to substantially avoid obstructing the transmission of light from the pixels, as required by claims 1 and 17, but

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rather does the opposite in that it substantially completely spans the region between the pixels and support 5.

Other descriptions within Nishio are likewise deficient. For example, in the device of FIGS. 1, 2 and 4 of Nishio, the adhesive material region 9/10 (there is no drying agent region illustrated 14/37 in these FIGS) is clearly *not* configured so as to substantially avoid obstructing the transmission of light from active pixels permitted by the cover. Indeed, the adhesive material region 9/10 *completely covers* the pixels.

Turning to FIGS 6 and 7 of Nishio, the adhesive material region 9/10 in these figures is not provided between the pixels as required by claims 1 and 17, but rather is provided on the opposite side of the substrate from the pixels.

In brief summary, the Office Action argues that it would have been obvious to include the patterned getter layer between some of the plurality of pixels of the display of Rogers as taught by Nishio for effectively reducing deterioration of EL elements that may be caused from exposure to moisture.

However, the so-called "the patterned getter layer" being referred to in the Office Action is apparently the adhesive layer of Nishio, which as used in Nishio to secure plural small-size panels to a large-size support. Since Rogers does not employ plural small-size panels, there would be no motivation to use such a layer in the device of Rogers, much less between pixels.

Moreover, to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. However, if the references were combined as suggested by the Examiner, the resulting combination would fail to meet the limitations of claims 1 and 17, which require, *inter alia*, the following: (a) a cover that permits transmission of light from the active pixels to an outer environment and (b) a patterned getter layer, at least a portion of which is provided between at least some of the plurality of the pixels (which, in claims 1 and 17, are disposed over a common substrate), and which is configured so as to substantially avoid obstructing the transmission of light that is permitted by the cover from the pixels to the outer environment.

For at least the above reasons, it is respectfully submitted that a *prima facie* case of obviousness has not been established with respect to claims 1 and 17. Accordingly,

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claims 1 and 17 are patentable over Rogers and Nishio, as are claims 2-5, 7-9, 12-16, 18-20 and 42-46 depending therefrom.

Reconsideration and withdrawal of the rejection of claims 1, 3-5, 7-9, 16, 17, 19, 20, 43 and 45 under 35 U.S.C. 103(a) as being obvious over Rogers and Nishio are therefore respectfully requested.

**Rejection under 35 U.S.C. 103(a)—Rogers, Nishio and Duggal**

Claims 2 and 12-15 are rejected under 35 U.S.C. 103(a) as being obvious over Rogers and Nishio and further in view of Duggal (U.S. Patent No. 6,465,953). Applicant respectfully traverses this rejection and its supporting remarks.

For example, independent claim 1 is patentable over Rogers and Nishio for the reasons set forth above. Duggal, which is cited for alleged disclosure of various features found in claims 2 and 12-15, does not overcome the above noted deficiencies in Rogers and Nishio. Accordingly, claim 1 is patentable over Rogers, Nishio and Duggal, as are claims 2 and 12-15 depending therefrom.

Reconsideration and withdrawal of the rejection of claims 2 and 12-15 under 35 U.S.C. 103(a) as being obvious over Rogers, Nishio and Duggal are therefore respectfully requested.

**Rejection under 35 U.S.C. 103(a)—Rogers, Nishio and Bernius**

Claims 18 is rejected under 35 U.S.C. 103(a) as being obvious over Rogers, Nishio and Bernius (U.S. Patent No. 6,383,664). Applicant respectfully traverses this rejection and its supporting remarks.

For example, independent claim 17 is patentable over Rogers and Nishio for the reasons set forth above. Bernius, which is cited for alleged disclosure of various features found in claim 18, does not overcome the above noted deficiencies in Rogers and Nishio. Accordingly, claim 17 is patentable over Rogers, Nishio and Bernius, as is claim 18 depending therefrom.

Reconsideration and withdrawal of the rejection of claim 18 under 35 U.S.C. 103(a) as being obvious over Rogers, Nishio and Bernius are therefore respectfully requested.

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**Rejection under 35 U.S.C. 103(a)—Rogers, Nishio and Duggal**

Pending claims 26, 28, 29, 32, 38-40, 44 and 46 stand rejected under 35 U.S.C. 103(a) as being obvious over Rogers and Nishio in view of Duggal. Applicant respectfully traverses this rejection and its supporting remarks.

**Claims 44 and 46**

It is noted that independent claims 1 and 17 are patentable over Rogers and Nishio for the reasons set forth above, and Duggal does not make up for the deficiencies in Rogers and Nishio. Accordingly, claims 1 and 17 are patentable over Rogers, Nishio and Duggal, as are claims 44 and 46 depending therefrom.

**Claims 26, 28, 29, 32 and 38-40**

Of claims 26, 28, 29, 32 and 38-40, only claim 26 is independent. Claim 26 is directed to a flexible OLED device structure comprising: (a) a flexible substrate; (b) a flexible OLED display area comprising a plurality of active pixels disposed over the substrate, which comprise an anode region, a cathode region and a light-emitting region; (c) a flexible cover over the OLED display area, wherein at least one of the flexible substrate and the flexible cover permits transmission of light from the plurality of active pixels to an outer environment, and wherein the flexible cover and the flexible substrate cooperate to restrict transmission of oxygen and water vapor from the outer environment to the OLED display area; and (d) a patterned getter layer disposed between the flexible substrate and the flexible cover, wherein the patterned getter layer is configured so as to substantially avoid obstructing the transmission of light from the plurality of active pixels to the outer environment, wherein at least a portion of the patterned getter layer is provided between at least some of the plurality of pixels.

In essence, the Office Action asserts that claim 26 is obvious over Rogers and Nishio for the same reasons were set forth in conjunction with claim 1, except that Rogers and Nishio do not exemplify a flexible cover.

As noted above, however, claim 1 is not obvious over Rogers and Nishio, and neither is claim 26.

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For example, as indicated above, the Office Action attempts to use Nishio's teachings that a drying agent can be added to the adhesive in conjunction with the devices of Figs. 1 to 3 (which makes sense in the inventions of Figs. 1 to 3, because no other desiccant is provided) and apply these teachings to non-analogous devices in Nishio such as those described at col. 3, lines 1-8 and illustrated in Fig. 5. These devices are non-analogous, because a desiccant is provided within the space between the panels 1-4 and the large-size support 5, filling the need which was filled in Figs. 1 to 3 by providing a desiccant in the adhesive.

As also noted above, even assuming solely for the sake of argument that there is motivation to provide a drying agent within the adhesive of devices such as those described at col. 3, lines 1-8 and illustrated in Fig. 5 of Nishio, it is nonetheless respectfully submitted that the adhesive material region 9/10 is not "provided between at least some of the plurality of pixels" as claimed in claims 1 and 17, because the claimed pixels are disposed over a single substrate, whereas the pixels in Nishio reside on multiple substrates. Nor is there motivation to provide such an adhesive between pixels on the same substrate, for example, due to the close inter-pixel spacing found in most display devices and due to Nishio's motivations for applying the adhesive in the first place (i.e., to secure multiple panels to a large-size support).

In addition, because Rogers does not employ plural small-size panels, there would be no motivation to use such a layer in the device of Rogers as proposed in the Office Action.

Thus, it is respectfully submitted (a) that there is not motivation to combine the references as proposed in the Office Action (e.g., due to different motivations between the references), (b) that the Office Action is applying impermissible hindsight, using Applicant's own disclosure as a template to pick and choose isolated elements from the prior art and combine them so as to yield the invention in question (e.g., by attempting to use a desiccant-containing adhesive from one device in Nishio, to another device in Nishio in which the drying function is provided a desiccant that is located within the spaces between the panels and the large-size support, thereby filling the need for a desiccant-containing adhesive), and (c) that even if the references were combined as suggested in the Office Action, the resulting combination would fail to meet the



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limitations of claim 26 (e.g., fail to provide a patterned getter layer, at least a portion of which is provided pixels on a common substrate).

Duggal does not make up for these deficiencies in Rogers and Nishio.

For at least these reasons, it is respectfully submitted that a *prima facie* case of obviousness has not been established with respect to claim 26. Accordingly, claim 26 is patentable over Rogers, Nishio and Duggal, as are claims 26, 28, 29, 32, 38-40, which depend from claim 26.

For at least the above reasons, reconsideration and withdrawal of the rejection of claims 26, 28, 29, 32, 38-40, 44 and 46 under 35 U.S.C. 103(a) as being obvious over Rogers, Nishio and Duggal are therefore respectfully requested.

**Rejection under 35 U.S.C. 103(a)—Rogers and Duggal**

Pending claim 30 stands rejected under 35 U.S.C. 103(a) as being obvious over Rogers in view of Duggal. Applicant respectfully traverses this rejection and its supporting remarks.

Independent claim 30 is directed to a flexible OLED device structure comprising: (a) a flexible substrate; (b) a flexible OLED display area comprising a plurality of active pixels disposed over the substrate, each of the plurality of active pixels comprising an anode region, a cathode region and a light-emitting region; (c) a flexible cover over the OLED display area, wherein at least one of the flexible substrate and the flexible cover permits transmission of light from the plurality of active pixels to an outer environment, and wherein the flexible cover and the flexible substrate cooperate to restrict transmission of oxygen and water vapor from the outer environment to the OLED display area; and (d) a patterned getter layer disposed between the flexible substrate and the flexible cover, the patterned getter layer being configured so as to substantially avoid obstructing the transmission of light from the plurality of active pixels to the outer environment, wherein portions of the patterned getter layer are sufficiently narrow to prevent the patterned getter layer from cracking when the OLED device structure is flexed during normal service and wherein the patterned getter layer comprises a plurality of narrow bands of getter material.

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According to the Office Action, Rogers discloses all the limitations of claim 30, but for the substrate and cover being flexible and turns to Duggal for this teaching. The Office Action concludes that it would have been obvious to include a flexible plastic substrate and cover in the organic EL element of Rogers as suggested by Duggal for providing the benefit of manufacturing a flexible display, which can be applied to bendable surfaces. Applicant respectfully disagrees.

For example, Rogers provides no suggestion or motivation to provide a patterned getter layer that comprises a plurality of narrow bands of getter material, portions of which patterned getter layer are sufficiently narrow to prevent the getter layer from cracking when the OLED device structure is flexed during normal service. Indeed, the device of Rogers is a rigid device. Hence, absent motivation to the contrary, it is submitted that one of ordinary skill would attempt to maximize width of the getter material present to the greatest extent possible and thus would *not* provide a device like that of claim 30 with a patterned getter layer that comprises a plurality of narrow bands of getter material, portions of which are sufficiently narrow to prevent the getter layer from cracking when flexed during normal surface.

Moreover, even though Duggal describes a flexible device, there is no teaching or suggestion in to provide a patterned getter layer that comprises a plurality of narrow bands of getter material, portions of which are sufficiently narrow to prevent the getter layer from cracking when flexed during normal surface.

Hence, even if the references were combined as suggested by the Examiner, the resulting combination would fail to meet the limitations of claim 30. Moreover, absent a teaching in one of these references of a patterned getter layer that comprises a plurality of narrow bands of getter material, portions which are sufficiently narrow to prevent the getter layer from cracking when flexed during normal surface, it is clear that the Office Action is applying impermissible hindsight, using Applicant's own disclosure as source for this claim element.

For at least these reasons, it is respectfully submitted that a *prima facie* case of obviousness has not been established with respect to claim 30. Accordingly, reconsideration and withdrawal of the rejection of claim 30 under 35 U.S.C. 103(a) as being obvious over Rogers and Duggal are respectfully requested.

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**Rejection under 35 U.S.C. 103(a)—Rogers, Nishio, Duggal and Jones**

Pending claims 31 and 43 are rejected under 35 U.S.C. 103(a) as being obvious over Rogers, Nishio and Duggal and further in view of Jones (U.S. Patent No. 6,624,570). Applicant respectfully traverses this rejection and its supporting remarks.

For example, the Office Action states that "it would have been obvious to one of ordinary skill in the art at the time of the invention to apply the patterned getter layer in the display device of Rogers, Nishio and Duggal in the form of dots as suggested by Jones for advantageously dispersing the getter material in the desired area.

However, the "patterned getter layer in the display device of Rogers, Nishio and Duggal" does not meet the limitations of claims 1 and 26 for at least the reasons discussed above. Moreover, the devices of Jones (which are inorganic, vacuum-sealed, field emission display devices from art that is non-analogous to the organic electroluminescent device art of Rogers, Nishio and Duggal), do not make up for the above-noted deficiencies in Rogers, Nishio and Duggal.

Accordingly, claims 1 and 26 are patentable over Rogers, Nishio Duggal and Jones, as are claims 31 and 43 depending therefrom.

Reconsideration and withdrawal of the rejection of claims 31 and 43 under 35 U.S.C. 103(a) as being obvious over Rogers, Nishio, Duggal and Jones are therefore respectfully requested.

**Rejection under 35 U.S.C. 103(a)—Rogers, Nishio, Duggal and Sheats**

Pending claims 27, 33, 34 and 36 are rejected under 35 U.S.C. 103(a) as being obvious over Rogers, Nishio and Duggal and further in view of Sheats (U.S. Patent No. 6,126,225). Applicant respectfully traverses this rejection and its supporting remarks.

For example, independent claim 26 is patentable over Rogers, Nishio and Duggal for at least the reasons set forth above. Sheats, which is cited for alleged disclosure of various features found in claims 27, 33, 34 and 36, does not overcome the above noted deficiencies in Rogers, Nishio and Duggal. Accordingly, claim 26 is patentable over Rogers, Nishio, Duggal and Sheats, as are the claims depending therefrom, including claims 27, 33, 34 and 36 (moreover, claim 36 has been cancelled without prejudice or disclaimer).

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Reconsideration and withdrawal of the rejection of claims 27, 33, 34 and 36 under 35 U.S.C. 103(a) as being obvious over Rogers, Nishio, Duggal and Sheats are therefore respectfully requested.

**Rejection under 35 U.S.C. 103(a)—Rogers, Nishio, Duggal, Sheats and Harvey**

Pending claim 35 is rejected under 35 U.S.C. 103(a) as being obvious over Rogers, Nishio, Duggal and Sheats, and further in view of Harvey (U.S. Patent No. 6,757,126). Applicant respectfully traverses this rejection and its supporting remarks.

For example, independent claim 26 is patentable over Rogers, Nishio, Duggal, and Sheats for at least the reasons set forth above. Harvey, which is cited for alleged disclosure of a flexible cover that comprises a substrate-sublayer, does not overcome the above noted deficiencies in Rogers, Nishio, Duggal and Sheats. Accordingly, claim 26 is patentable over Rogers, Nishio, Duggal, Sheats and Harvey, as are the claims depending therefrom, including claim 35.

Reconsideration and withdrawal of the rejection of claim 35 under 35 U.S.C. 103(a) as being obvious over Rogers, Nishio, Duggal, Sheats and Harvey are therefore respectfully requested.

**Rejection under 35 U.S.C. 103(a)—Rogers, Nishio, Duggal and Pichler**

Pending claim 37 is rejected under 35 U.S.C. 103(a) as being obvious over Rogers, Nishio and Duggal and further in view of Pichler (U.S. Patent No. 5,929,562). Applicant respectfully traverses this rejection and its supporting remarks.

For example, independent claim 26 is patentable over Rogers, Nishio and Duggal for at least the reasons set forth above. Pichler, which is cited for alleged disclosure of a flexible substrate comprising a metal foil, does not overcome the above noted deficiencies in Rogers, Nishio and Duggal. Accordingly, claim 26 is patentable over Rogers, Nishio, Duggal and Pichler, as are the claims depending therefrom, including claim 37.

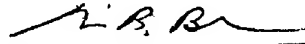
Reconsideration and withdrawal of the rejection of claim 37 under 35 U.S.C. 103(a) as being obvious over Rogers, Nishio, Duggal and Pichler are therefore respectfully requested.

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**CONCLUSION**

Applicants submit that all pending claims are in a condition for allowance, early notification of which is earnestly solicited. The Examiner is encouraged to telephone the Applicant's attorney at (703) 433-0510 in order that any outstanding issues be resolved.

Respectfully submitted,



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